

Aims

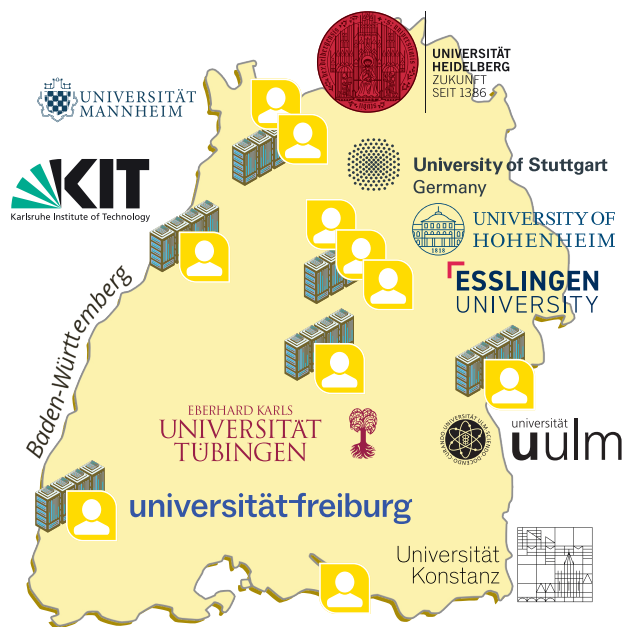
To meet the growing demand of scientific computing and processing large amounts of data in research, education and academic studies, the state of Baden-Württemberg has implemented a general strategy known as "bwHPC" for Baden-Württemberg High-Performance Computing. This initiative is not only focusing on HPC but also fosters Data Intensive Computing (DIC), which has gained prominence in recent years under the keyword "Big Data", and incorporates aspects of machine learning (ML) and artificial intelligence (AI).

The bwHPC-S5 project, funded by the Baden-Württemberg Ministry of Science, Research, and the Arts (MWK), serves as a link between researchers and HPC systems. This state-wide project supports bwHPC users and coordinates all related activities, leading to significant synergy effects. By establishing subject-specific competence centers, the project pools expertise and thus facilitates the integration of scientific communities into the realms of HPC/AI and DIC.

bwHPC-S5 takes the federal service management, established in previous projects, and enhances it in regards of acquisition, processing, storage and archiving of large scientific datasets. Additionally, it offers a coordinated training program covering HPC and DIC topics.

Within this framework, new technologies can be discussed with users, and their evaluation can be coordinated on a state-wide level. The insights gained from these processes are then seamlessly integrated into current operations and procedures, ensuring timely and effective implementation.

Project Partners



Project Management

- Scientific Computing Center (SCC)
Karlsruhe Institute of Technology (KIT)
- Communication and Information Center (kiz)
Ulm University

Scientific Simulation and Storage Support Services

*Enhanced Expertise and Support for
High-Performance Computing in
Baden-Württemberg*



An initiative of the state of Baden-Württemberg, aimed at improving access to high-performance computing (HPC) and Data Intensive Computing (DIC) for research institutions and universities in Baden-Württemberg.

Gefördert
durch



**Baden-Württemberg
Ministerium für Wissenschaft,
Forschung und Kunst**

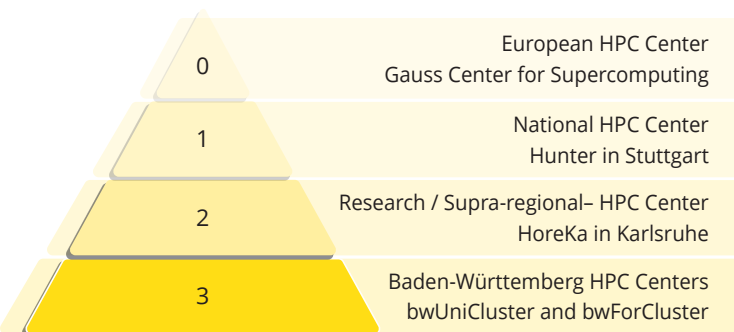
The project bwHPC-S5 consolidates expertise in High-Performance Computing (HPC) and Data Intensive Computing (DIC) offering scientists a portal to access and utilize these services.



HPC and Data Storage Systems for any demand

Researchers in Baden-Württemberg have access to HPC, AI and data storage systems serving a wide range of performance requirements, including DIC applications.

These systems are organized into tier levels, ranging from 0 to 3, which correspond to varying compute capacities. Higher tier levels indicate greater compute capabilities and increased parallelization of simulation codes, enabling the processing of larger quantities of data.

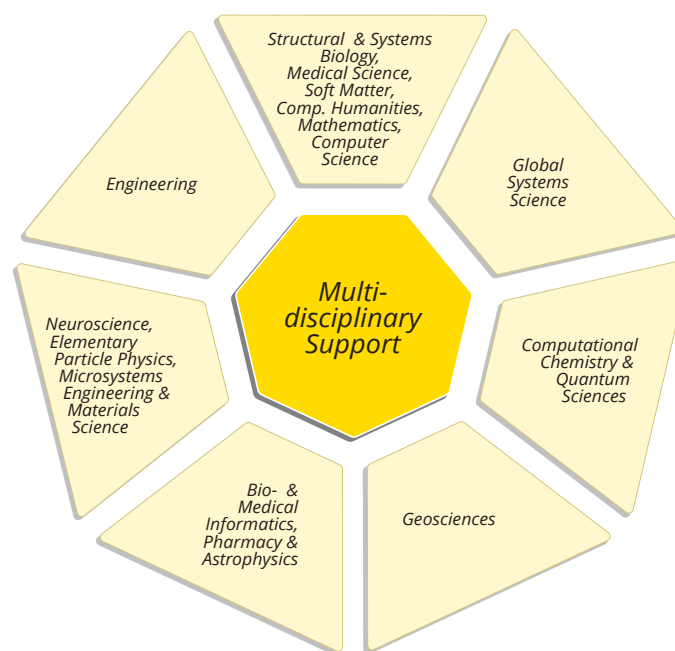


- The bwUniCluster and the bwForClusters, funded by the state of Baden-Württemberg and the German Research Foundation (DFG) respectively, form the foundation of the tier level pyramid.
- These clusters have been customized to meet the specific requirements of scientific communities and their applications, ensuring optimal efficiency.
- At the top of the pyramid are the supercomputer Hunter (tier 1 and 0) and the HPC cluster HoreKa (tier 2), supported by federal and state programs.



Discipline-specific HPC- and DIC-Competence Centers

The bwHPC-S5 project provides support through Competence Centers comprised of expert teams from various universities in Baden-Württemberg specializing in HPC, AI and DIC. These centers bundle the state-wide HPC expertise for user support in specific research domains, thereby strengthening and expanding the range of consulting services available to numerous scientific communities.



The diagram illustrates the user support framework established by the bwHPC-S5 project: Seven statewide bwHPC competence centers focused on specific research domains, supported by a multidisciplinary team for user assistance across all research fields.



Services

The bwHPC-S5 project provides a comprehensive service for users in Baden-Württemberg on topics related to HPC/AI and DIC systems, such as:

- Assistance for new users entering the HPC systems of tier level 3
- Guidance and support for parallelizing code and advancing to higher tier levels
- Support for data intensive computing
- A comprehensive training program on HPC and DIC with courses coordinated across the state
- Technical documentation and best practices for optimizing HPC resource utilization
- Access to development tools and scientific software on HPC systems
- A state-wide support portal for users of the HPC systems

Further information is available at the project website www.bwHPC.de with links to:

- Technical documentation, best practice guides and usage of the HPC resources
- Access procedures, installed software and status of the clusters and data storage systems
- Information on the state-wide course program
- Results and success stories of the bwHPC-S5 project
- Details on further tasks and responsibilities of bwHPC-S5